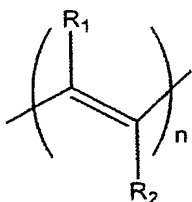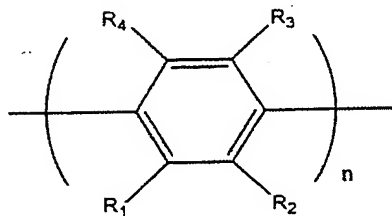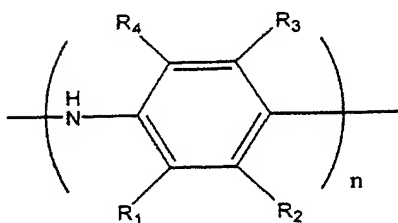**CLAIMS**

1.   Use of at least one electrically conductive or semiconductive polymer as sensitive material in a resistive or gravimetric sensor intended to detect one or more nitro compounds chosen from the group formed by nitroaromatic compounds, nitramines, nitrosamines and nitric esters.

2.   Use according to Claim 1, in which the polymer is chosen from polymers meeting the following formulae (I), (II), (III), (IV) and (V):

$$\left(\begin{array}{c} R_1 \\ | \\ C=C \\ | \\ R_2 \end{array} \right)_n \qquad (I)$$

$$\left(\begin{array}{c} R_4 \quad R_3 \\ \\ R_1 \quad R_2 \end{array} \right)_n \qquad (II)$$

$$\left(\begin{array}{c} R_4 \quad R_3 \\ \overset{H}{N} \\ R_1 \quad R_2 \end{array} \right)_n \qquad (III)$$

$$\left(\begin{array}{c} \overset{H}{N} \\ \\ R_1 \qquad R_2 \end{array}\right)_n \qquad \text{(IV)}$$

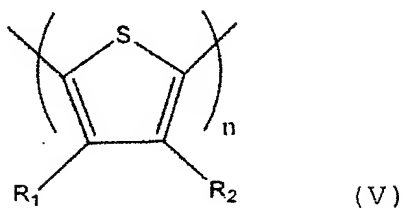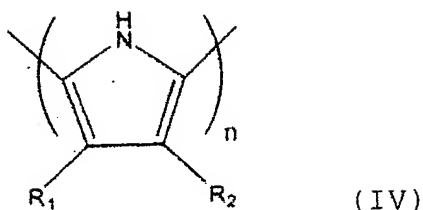$$\left(\begin{array}{c} S \\ \\ R_1 \qquad R_2 \end{array}\right)_n \qquad \text{(V)}$$

in which n is an integer ranging from 5 to 100 000, while R_1, R_2, R_3 and R_4 represent, independently of one another:

- a hydrogen or halogen atom;

- a methyl group;

- a saturated or unsaturated, linear, branched or cyclic hydrocarbon chain containing 2 to 100 carbon atoms, and optionally one or more heteroatoms and/or one or more chemical functions that include at least one heteroatom, and/or one or more substituted or unsubstituted, aromatic or heteroaromatic groups;

- a chemical function that includes at least one heteroatom; or

- a substituted or unsubstituted, aromatic or heteroaromatic group.

3. Use according to Claim 1 or Claim 2, in which the polymer is chosen from polyacetylenes, polyphenylenes,

polyanilines, polypyrrols, polythiophenes, and poly(3-alkylthiophenes).

4.   Use according to Claim 3, in which the polymer is a poly(3-alkylthiophene), in particular a poly(3-dodecylthiophene).

5.   Use according to any one of the preceding claims, in which the polymer is subjected to a doping reaction and/or a dedoping reaction.

6.   Use according to any one of the preceding claims, in which the polymer is used in the sensor in the form of a thin film covering one or both faces of a substrate.

7.   Use according to Claim 6, in which the thin film measures 10 Angströms to 100 microns in thickness.

8.   Use according to Claim 6 or Claim 7, in which the thin film is prepared by a technique chosen from spraying, spin coating, drop coating, dip coating, the Langmuir-Blodgett technique, electrochemical deposition and *in situ* polymerization of a precursor monomer of the polymer.

9.   Use according to Claim 1, in which the sensor is a quartz microbalance sensor.

10. Use according to Claim 1, in which the sensor is a multisensor comprising several sensors that are chosen

from resistive and gravimetric sensors, at least one of these sensors comprising an electrically conductive or semiconductive polymer as sensitive material.

5   11. Use according to any one of the preceding claims, in which the nitro compound(s) to be detected are in solid, liquid or gaseous form.

12. Use according to any one of the preceding claims,
10   in which the nitro compound(s) to be detected are chosen from nitrobenzene, dinitrobenzene, trinitrobenzene, nitrotoluene, dinitrotoluene, trinitrotoluene, dinitrofluorobezene, dinitrotrifluoromethoxybenzene, aminodinitrotoluene,
15   dinitrotrifluoromethylbenzene, chlorodinitrotrifluoromethylbenzene, hexanitrostilbene, trinitrophenylmethylnitramine and trinitrophenol.

13. Use according to any one of the preceding claims
20   for the detection of explosives.